IN THE CLAIMS

1 (Previously Presented). The method of claim 6 comprising:

receiving over a channel a signal including a desired portion associated with a desired channel and an undesired portion mixed with said desired portion; and

recovering the desired portion from the signal by adaptively equalizing the channel based on empirical estimation of the received signal auto-covariance and at least one of prior knowledge or empirical estimation of the desired channel.

2 (Original). The method of claim 1, receiving said signal including:

receiving the desired portion of the signal including desired channel portions of said channel from a desired source;

receiving a priori information related to the desired portion over said channel to derive said prior knowledge; and

receiving the undesired portion of the signal in a distorted form including an interference from one or more interfering sources.

3 (Original). The method of claim 2, including:

using an array of at least two spatially separated antennas to receive the signal into at least two propagating signal portions through at least two propagation paths.

4 (Previously Presented). The method of claim 3, including:

estimating a space-time cross-covariance matrix of the received signal and the desired channel from said at least two propagating signal portions and said a priori information related to the desired portion over a signal burst; and

deriving one or more equalizer coefficients that are based on averaging of the received signal over a time window that corresponds to the signal burst.

5 (Original). The method of claim 4, including:

adjusting each propagating signal portion of said at least two propagating signal portions through said at least two propagation paths based on the one or more equalizer coefficients to provide corresponding equalized outputs;

combining said equalized outputs into a common output to remove the undesired portion from the received signal; and

applying a threshold decision criterion to the common output to recover the desired portion from the received signal.

6 (Previously Presented). A method comprising:

receiving at least two propagating signal portions of the received signal through at least two propagation paths;

observing the received signal patterns in the channel to derive said empirical estimate;

extracting the undesired portion from the signal based on the empirical estimate of the received signal;

averaging the temporal transitions of the interference patterns across the at least two propagating signal portions to derive the desired portion from the received signal;

operating on the channel using said at least two propagation paths to compute a measure indicative of an average behavior of the channel; and

estimating the received signal based on said measure.

7 (Original). The method of claim 6, including providing an adaptive equalization by periodically repeating the empirical estimation of the desired channel, and the received signal auto-covariance.

8 (Previously Presented). A method comprising:

receiving one or more data symbols in the received signal over the channel; and

estimating an auto-covariance matrix of the received signal and a cross-covariance vector of the received signal and the transmitted one or more data symbols by manipulating and

averaging the received signal over at least two signal portions of the signal in parallel over a first and a second propagation paths.

9 (Original). The method of claim 8, including adaptively adjusting equalization parameters of the channel based on a plurality of first samples of the received signal collected in said first propagation path and a plurality of second samples of the received signal collected in said second propagation path.

10 (Original). The method of claim 9, including:

operating on the channel in a dual reception mode in order to extract the undesired portion to increase gain of the signal; and

separating said desired portion from said signal in said first and second propagation paths by removing said undesired portion from the received signal.

11 (Currently Amended). An apparatus, comprising:

a processor;

a communication interface operably coupled to said processor to receive over a channel a signal including a desired portion associated with a desired channel and an undesired portion mixed with said desired portion; ~~and~~

a device operably coupled to said processor to recover the desired portion from the signal, said device to use an array of at least two spatially separated antennas to receive the signal in at least two propagating signal portions through at least two propagation paths; and

said device to average the temporal transitions of the interference patterns across the at least two propagating signal portions to derive the desired portion from the received signal and operate on the channel using said at least two propagation paths to compute a measure indicative of an average behavior of the channel.

12 (Original). The apparatus of claim 11, wherein said communication interface includes at least two antennas.

13 (Original). The apparatus of claim 11, wherein said device is a MODEM.

14 (Original). The apparatus of claim 13, wherein said MODEM includes an equalizer capable of detecting said signal in the presence of at least one of co-channel and inter-symbol interferences.

15 (Original). The apparatus of claim 14, wherein said MODEM is adapted to operate in a cellular environment with time division multiple access to enable digital transmission of the signal allowing a number of users to access a single radio frequency channel without interference by allocating unique time slots to each user within each channel.

16 (Original). The apparatus of claim 11, wherein said device is an adaptive equalizer providing a blind adaptive space-time equalization on said signal based on minimum mean square error that reduces an interference in an asynchronous time division multiple access cellular system.

17 (Currently Amended). The apparatus of claim 11, said device to further:

receive at least two propagating signal portions of the received signal through at least two propagation paths;

observe the received signal patterns in the channel to derive said empirical estimate; extract the undesired portion from the signal based on the empirical estimate of the received signal;

~~average the temporal transitions of the interference patterns across the at least two propagating signal portions to derive the desired portion from the received signal;~~

~~operate on the channel using said at least two propagation paths to compute a measure indicative of an average behavior of the channel;~~

estimate the received signal based on said measure; and

providing an adaptive equalization by periodically repeating the empirical estimation of the desired channel, and the received signal auto-covariance.

Claim 18 (Canceled).

19 (Previously Presented). The apparatus of claim 17, said device to further:

estimate a space-time cross-covariance matrix of the received signal and the desired channel from said at least two propagating signal portions and said a priori information related to the desired portion over a signal burst; and

derive one or more equalizer coefficients that are based on averaging of the received signal over one signal burst.

20 (Original). The apparatus of claim 19, said device to further:

adjust each propagating signal of said at least two propagating signal portions through said at least two propagation paths based on the one or more equalizer coefficients to provide corresponding equalized outputs;

combine said equalized outputs into a common output to remove the undesired portion from the received signal; and

apply a threshold decision criterion to the common output to recover the desired portion from the received signal.

Claims 21-26 (Canceled).

27 (Previously Presented). An article comprising a medium storing instructions that enable a processor-based system to:

receive over a channel a signal including a desired portion associated with a desired channel and an undesired portion mixed with said desired portion;

recover the desired portion from the signal by adaptively equalizing the channel based on empirical estimation of the received signal auto-covariance and at least one of prior knowledge or empirical estimation of the desired channel; and

provide adaptive equalization by periodically repeating the empirical estimation of the desired channel and the received signal auto-covariance.

Claim 28 (Canceled).

29 (Previously Presented). The article of claim 27, further storing instructions that enable the processor-based system to use an array of at least two spatially separated antennas to provide the signal into at least two propagating signal portions through at least to propagation paths.

30 (Original). The article of claim 29, further storing instructions that enable the processor-based system to:

estimate a space-time cross-covariance matrix of the received signal and the desired channel from said at least two propagating signal portions and said a priori information related to the desired portion over a signal burst;

derive one or more equalizer coefficients that are based on the average of the received signal over a time window that is substantially same as the signal burst;

adjust each propagating signal portion of said at least two propagating signal portions through said at least two propagation paths based on the one or more equalizer coefficients to provide corresponding equalized outputs;

combine said equalized outputs into a common output to remove the undesired portion from the received signal; and

apply a threshold decision criterion to the common output to recover the desired portion from the received signal.